ATTACHMENT 1

2016 Comments

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Implementation of Section 716 and 717 of	)	CG Docket 10-213
The Communications Act of 1934, as Enacted	)	
by the Twenty-First Century Communications	)	
and Video Accessibility Act of 2010	)	

COMMENTS OF CONSUMER GROUPS AND DHH-RERC ON PUBLIC NOTICE

Telecommunications for the Deaf and Hard of Hearing, Inc.
National Association of the Deaf
Deaf and Hard of Hearing Consumer Advocacy Network
Hearing Loss Association of America
Association of Late-Deafened Adults, Inc.
Cerebral Palsy and Deaf Organization
Deaf Seniors of America
Deaf/Hard of Hearing Technology-RERC

Telecommunications for the Deaf and Hard of Hearing, Inc., National Association of the Deaf, Deaf and Hard of Hearing Consumer Advocacy Network, Hearing Loss Association of America, Association of Late-Deafened Adults, Inc., Cerebral Palsy and Deaf Organization, Deaf Seniors of America (collectively "Consumer Groups") and the Deaf/Hard of Hearing Technology RERC ("DHH-RERC"), submit these comments in response to the Federal Communication Commission's ("Commission") Public Notice released on May 23, 2016,[1] seeking comments to inform the preparation of the 2016 biennial report to Congress required by the Twenty-First Century Communications and Accessibility Act of 2010 ("CVAA").

[1] Implementation of Section 716 and 717 of the Communications Act of 1934, as Enacted by the Twenty-First Century Communications Video Accessibility Act of 2010, CG Docket No. 10-213, *Public Notice*, DA 16-575 (rel. May 23, 2016).

The Consumer Groups and DHH-RERC are grateful for this opportunity to once again provide input on this important matter. We have reviewed our Comments filed on August 4, 2014[2] (the "*2014 Comments*"), have attached hereto a copy of the *2014 Comments* and provided updates and additional information as appropriate.

I. ACCESSIBILITY UNDER SECTION 255

A. Real-Time Text ("RTT")

The Consumer Groups and DHH-RERC applaud the progress that the Commission, through the Disability Advisory Committee ("DAC") and its Technology Transitions Subcommittee, has made with respect to RTT and its potential as an alternative to current-generation TTY technology. As we have stated previously, "the transition period from TTY to RTT services must be sufficiently gradual so as to allow consumers as well as governmental entities and businesses to substitute RTT technology for TTYs." RTT services should allow deaf and hard of hearing persons to make direct calls to hearing users who use mainstream technologies without the hearing users having to take extra steps to enable RTT. The Commission's Report should identify the recommendations of DAC with respect to RTT and the action taken, and progress made, to meet those recommendations.[3]

B. Hearing Aid Compatible Phones

Deaf and hard of hearing people continue to struggle to find phones, both non-mobile and wireless, to meet their accessibility needs. Not all wireless phones are Hearing Aid Compatible

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[2] Implementation of Section 716 and 717 of the Communications Act of 1934, as Enacted by the Twenty-First Century Communications Video Accessibility Act of 2010, CG Docket No. 10-213, *Comments of Consumer Groups and Telecom-RERC In Response to Public Notice* (Aug. 4, 2014) ("*2014 Comments*") (provided as Attachment 1).

[3] Recommendation of the FCC Disability Advisory Committee, Technology Transitions Subcommittee (dated Feb. 23, 2016) (provided as Attachment 2) ("DAC Recommendation on RTT") available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-337908A1.pdf; *see also* Recommendation of the FCC Disability Advisory Committee Ad Hoc Real-Time Text Subcommittee (dated Oct. 8, 2015) available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-335867A1.pdf.

("HAC"), particularly for individuals who rely on telecoil coupling capability. Proprietary direct connect solutions are limited and expensive options that often only work with specific brands of hearing aids and therefore cannot meet everyone's needs. We also find that HAC phones often work better with some hearing aids than others. The Consumer Group and DHH-RERC commend the Commission for its recent NPRM, which seeks comment on the joint consensus proposal by industry and consumer group stakeholders addressing how HAC phones can reach 100 percent hearing aid compatibility.[4]

Simply finding a HAC phone that works with a person's hearing aid is still challenging. Readily available information to help a customer determine which phone works best for his or her needs is often lacking in retail settings. Retail employees in wireless service provider stores and particularly in big box and other types of retail outlets are often unfamiliar with HAC for off-the-shelf phones and therefore are unable to assist the customer in selecting an appropriate phone. Retails sales and service employees (both online and in physical stores) should be trained with respect to HAC phones and their capabilities in order to make the selection and purchasing process less onerous. In addition, if there were more HAC phones, finding a HAC phone that works with a particular hearing aid would be easier. While there has been improvement in

[4] Improvements to Benchmarks and Related Requirements Governing Hearing Aid-Compatible Mobile Handsets, WT Docket No. 15-285, Amendment to the Commission's Rules Governing Hearing Aid- Compatible Mobile Handsets, WT Docket No. 07-250, *Fourth Report and Order and Notice of Proposed Rulemaking*, 30 FCC Rcd 13845 (rel. Nov. 20, 2015); Letter from James Reid, Senior Vice President, Government Affairs, Telecommunications Industry Association, Scott Bergmann, Vice President, Regulatory Affairs, CTIA-The Wireless Association, Rebecca Murphy Thompson, General Counsel, Competitive Carriers Association, Anna Gilmore Hall, Executive Director, Hearing Loss Association of America, Claude Stout, Executive Director, Telecommunications for the Deaf and Hard of Hearing, and Howard A. Rosenblum, Chief Executive Officer, National Association of the Deaf, to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 07-250 & 10-254 (filed Nov. 12, 2015) available at http://apps.fcc.gov/ecfs/document/view?id=60001336016; *see also* Improvements to Benchmarks and Related Requirements Governing Hearing Aid-Compatible Mobile Handsets, WT Docket No. 15-285, Amendment to the Commission's Rules Governing Hearing Aid- Compatible Mobile Handsets, WT Docket No. 07-250, *Notice of Ex Parte of Competitive Carrier Association et al.* (filed May 16, 2016) available at http://apps.fcc.gov/ecfs/comment/view?id=60001742283.

accessibility under Section 255, there is a long way to go before deaf and hard of hearing customers can easily and affordably purchase HAC phones that suit their needs. Additionally, consumers may receive little if any education or training on how to properly use the telephone with their hearing devices, adding to the usability issues faced by those who either prefer to or need to rely on voice telecommunications.

C. High Definition Voice

The Consumer Groups and DHH-RERC also support the need for high definition (HD) voice-enabled phones and better noise-cancelling technology to reduce background noise in calls. Clearer, more natural sounding calls will improve the communication abilities of all consumers and may help make it possible for hard of hearing people to make calls even without assistive technology. Assuming it is adopted next week, the Commission's Report should identify the recommendations of DAC with respect to High Definition voice.[5]

D. Implementation of Text-to-911

While there has been some progress with respect to the availability of Text-to-911, based on the Commission's most recent list[6] only approximately 600 PSAPs have implemented Text-to-911. We understand that this is less than 10 percent of all PSAPs. Since Text-to-911 is a critical accessibility method for deaf and hard of hearing persons to reach emergency services, the status of its availability should be included in the report. Further, the Report should discuss whether wireless carriers and other providers of interconnected text messaging applications are complying with requirements to deploy the service within six months to PSAPs that request them

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[5] *See* Attachment 3 containing a proposed Recommendation of the FCC Disability Advisory Committee, Technology Transitions Subcommittee, HD VOICE (dated June 16, 2016) ("Proposed DAC HD Voice Recommendation") that will be considered at DAC's June 16, 2016 Meeting. The agenda for the meeting is available at https://www.fcc.gov/news-events/events/2016/06/disabillity-advisory-committee-meeting.

[6] *See* https://transition.fcc.gov/pshs/911/Text911PSAP/Text_911_Master_PSAP_Registry.xlsx.

and how quickly they are doing so. To the extent such data is not currently available, the Commission should collect such data.

II. ACCESSIBILITY UNDER SECTIONS 716 AND 718

The Consumer Groups and DHH-RERC continue to find the vast majority of certain kinds of advanced communication services ("ACS") not to be fully accessible to deaf and hard of hearing people. In our *2014 Comments* and comments filed in 2012 regarding the First Biennial Report,[7] we highlighted many of these accessibility issues and have seen limited to no improvement over the last two years. While not usually totally inaccessible, many ACS have only limited accessibility.

As we stated in our *2012 Comments*, "individual companies can engage in a number of activities to make their products and services accessible to people who are deaf or hard of hearing."[8] These include, but are not limited to the following: participating in advisory board meetings and focus groups; conducting needs assessments; documenting input from customers at sales centers; beta testing; and research and development.[9] "In fact, very few companies involve deaf and hard of hearing population in these activities in a meaningful and gainful way."[10] Consumer Groups and DHH-RERC encourage the Commission to recognize that greater involvement of the deaf and hard of hearing community would provide valuable guidance to companies in developing products that meet the accessibility compliance requirements of the CVAA.

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[7] Implementation of Section 716 and 717 of the Communications Act of 1934, as Enacted by the Twenty-First Century Communications Video Accessibility Act of 2010, CG Docket No. 10-213, *PN Comments - CVAA Report Tentative Findings* (Sept. 6, 2012) ("*2012 Comments*").

[8] *2012 Comments* at 7.

[9] *Id.*

[10] *Id*.

A. Video Conferencing Services

Video conferencing services have been a boon for many Americans who are now able to see the other party while communicating through these services with friends, family, and colleagues. While many deaf and hard of hearing people also enjoy video conferencing services, these services, as explained in the attached 2014 Comments, are not completely accessible and usable by deaf and hard of hearing people. The following issues identified and explained in our *2014 Comments* still exist today:

1. Relay services are not accessible through video conferencing services because they are tethered to ten-digit telephone numbers;
2. Video conferencing services, including off-the-shelf services, need to be interoperable with videophones provided by Video Relay Service (VRS) providers.
3. Video conferencing services need to be interoperable with each other.
4. Video conferencing services need to allow users to prioritize specific functions so that they best support the communications needs of the deaf and hard of hearing user.[11]

B. Games and Gaming Systems

As we stated in our *2012 Comments*,[12] *2014 Comments*[13] and in other proceedings,[14] many deaf and hard of hearing people continue to be unable to access or fully participate in games that use ACS components for communication between participants. Relay services should be included in these games to allow deaf and hard of hearing gamers to be included in this form of social interaction. Further, since the Second Report, virtual reality and other augmented reality

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[11] *2014 Comments* at 4-6.

[12] *2012 Comments* at 6.

[13] *2014 Comments* at 6.

[14] Implementation of Section 716 and 717 of the Communications Act of 1934, as Enacted by the Twenty-First Century Communications Video Accessibility Act of 2010,, CG Docket No. 10-213, *Consumer Groups Opposition to Petition for Waiver by Entertainment Software Association* (June 14, 2012).

products and services are more frequently part of, and integrated in, certain products and services, which makes such products and services inaccessible for the deaf and hard of hearing.

C. Accessible Alerting Settings

As we discussed in our *2014 Comments*, the continued lack of accessible alerting features for ACS results in missed calls and other messages.[15] For instance, video conferencing services, particularly on smartphones, often do not include accessible alert functions such as vibration and/or flashing lights. Although Internet of Things devices and capabilities, such as smart lights and other types of smart appliances, hold some promise for alleviating alerting deficiencies, they are in very early stages of development, and the lack of technical standards makes it virtually certain that at present every ACS would need to be customer-tailored to provide accessibility alerting. These deficiencies should be included in the Report.

D. Wireless Data Caps and Metering Negatively Affect Accessibility

As stated in our *2012 Comments*, many wireless service plans include data caps that have a heightened effect on deaf and hard of hearing users because they cannot use voice services as an alternative form of communication.[16] Instead, such users rely on data and video services that both require more expensive smartphones and use data at a high rate. Hearing users can generally avoid using such services for basic communications by using their voice minutes, which are generally unlimited. Deaf and hard of hearing users are disproportionately eating into the data for daily and routine communications out of necessity. "These users often pay overage fees because they must exceed the monthly data allowance of their plans simply to meet their communications needs -- needs which do not require similar data usage by other users."[17] Therefore, the

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[15] *2014 Comments* at 6.
[16] *2012 Comments* at 8.
[17] *Id*.

Consumer Groups and DHH-RERC request that the Commission incorporate concerns regarding wireless service data caps and metering plans into its report.

III. EFFECTS OF ACCESSIBILITY RECORDKEEPING AND ENFORCEMENT REQUIREMENTS

The Consumer Groups and DHH-RERC continue to share the Commission's position stated in its First Report that "its assessment of accessibility barriers with respect to 'new communications technologies' should not be limited to those 'telecommunications' and 'advanced communications services' technologies under Sections 255, 716, and 718."[18] This broad interpretation of "new communications technologies" does not mean a relaxed approach to the recordkeeping requirements of the CVAA is warranted. Rather, the Commission should continue to apply Section 717's recordkeeping and enforcement requirements to new communications technologies.

The Consumer Groups and DHH-RERC reiterate their suggestion that "the Commission require industry participants to produce periodic activity reports that specifically account for research and development activities that directly involve the deaf and hard of hearing community."[19] These reports would serve multiple purposes: (1) providing the Commission data to conduct a more thorough analysis of progress toward compliance with the CVAA, (2) providing the Commission and the deaf and hard of hearing community a better understanding of the amount and quality of input each company received from deaf and hard of hearing participants and to what degree that input was utilized in the development of accessible

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[18] *2012 Comments* at p. 10 (citing *Consumer and Governmental Affairs Bureau Seeks Comment on its Tentative Findings About the Accessibility of Communications Technologies for the First Biennial Report Under the Twenty-First Century Communications and Video Accessibility Act*, CG Docket No. 10-213, Public Notice at Attachment ¶ 27, DA 12-1391, 27 FCC Rcd 10172, released Aug. 23, 2012 (the "CVAA 1st Report Assessment PN"), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-12-1391A1.pdf.

[19] *2012 Comments* at p. 11.

equipment and services, and (3) holding the industry members more accountable in developing accessible products.

The Consumer Groups and DHH-RERC also reiterate their position that "industry members [who] have requested waivers because accessibility is not achievable should be required to report on the number of non-accessible and accessible units sold."[20] And, that information should be used in the Commission's biennial report to Congress in order to provide Congress with a more accurate picture of the level of collaboration between industry and consumers in the design, development and marketing stages of the products and services involved.

IV. CONCLUSION

The Consumer Groups and DHH-RERC appreciate the opportunity to submit comments with respect to this important report. While we appreciate all of the Commission's hard work and support in the last two years in various areas of interest to our constituents, accessibility of ACS for deaf and hard of hearing people continues to lag as those services become more and more integrated into our daily lives. We look forward to continue working with the Commission to assure accessibility requirements are met under the CVAA and other laws.

Respectfully submitted,

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[20] *Id.*

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FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
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Implementation of Section 716 and 717 of the Communications Act of 1934, as Enacted by the Twenty-First Century Communications and Video Accessibility Act of 2010	)	CG Docket No. 10-213

COMMENTS OF CONSUMER GROUPS AND TELECOM-RERC IN RESPONSE TO PUBLIC NOTICE

National Association of the Deaf
Telecommunications for the Deaf and Hard of Hearing, Inc.
Deaf and Hard of Hearing Consumer Advocacy Network
Association of Late-Deafened Adults, Inc.
Hearing Loss Association of America
California Coalition of Agencies Serving the Deaf and Hard of Hearing
Cerebral Palsy and Deaf Organization
Telecommunication-RERC

The National Association of the Deaf (NAD), Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI), Deaf and Hard of Hearing Consumer Advocacy Network (DHHCAN), Association of Late-Deafened Adults, Inc. (ALDA), Hearing Loss Association of America (HLAA), California Coalition of Agencies Serving the Deaf and Hard of Hearing (CCASDHH), Cerebral Palsy and Deaf Organization (CPADO), and Telecommunication-RERC (Technology Access Program at Gallaudet University and Trace Center at the University of Wisconsin-Madison (collectively, the "Consumer Groups and Telecom-RERC"), respectfully submit these comments in response to the Federal Communications Commission's ("FCC" or "Commission") June 17, 2014 Public Notice in the above-referenced proceeding which seeks comments to inform the preparation of the biennial report required by the Twenty-First Century Communications and Accessibility Act of 2010 (CVAA), to be submitted to Congress by

October 8, 2014.[1]

The Consumer Groups and Telecom-RERC are grateful for this opportunity to once again provide input on this important matter. We have reviewed our July 2012 comments and believe that little has changed with regard to accessibility under Section 255 as well as Section 716 in the last two years.[2] Thus we encourage the Commission to also review our July 2012 comments.

I. ACCESSIBILITY UNDER SECTION 255

Deaf and hard of hearing people continue to struggle finding phones, both non-mobile and wireless that meets their accessibility needs. We struggle to find good Hearing Aid Compatible (HAC) phones that work with our hearing aids. While many of us are excited about new products and features, such as Apple's iPhone which has a direct connect to some brands of hearing aids, those types of proprietary solutions offer limited and expensive options that do not suit everyone's needs. Some HAC phones still work better with some hearing aids than others. There continues to be a lack of readily available information in retail settings to help customers figure out which phone works best for them. Often retail employees are unfamiliar with HAC phones and unable to assist. If more phones were HAC, finding a HAC phone that works with a particular hearing aid would be less onerous for the consumer. Moreover, we've heard rumors of some products eliminating ports that accept neckloops or other coupling devices. Rumor has it that Apple, for example, is considering eliminating its headphone jack on the Apple iPhone 6 or

[1] *In the Matter of Implementation of Section 716 and 717 of the Communications Act of 1934, as Enacted by the Twenty-First Century Communications and Video Accessibility Act of 2010*, Biennial Report to Congress as Required by the Twenty-First Century Communications and Video Accessibility Act of 2010, DA 14-828 (rel. June 17, 2014) ("PN")*.*

[2] Consumer Groups Comment, CG Docket No. 10-213, http://apps.fcc.gov/ecfs/document/view?id=7021993872 (July 25, 2012); Hearing Loss Association of America (HLAA) Comment, CG Docket 10-213, http://apps fcc.gov/ecfs/document/view?id=7021993815 (July 25, 2012)

future models down the road.[3] We are concerned that such re-engineering happens too often without thought to accessibility needs of people who are deaf or hard of hearing. In HLAA's July 2012 comment, we highlighted many of these problems and particularly the lack of affordable specialty phones. While there has been improvement in accessibility under Section 255, we have a long way to go before deaf and hard of hearing customers can easily and affordably purchase accessible phones.

The Consumer Groups and Telecom-RERC have also supported the need for HD voice-enabled phones and we also support the need for better noise-cancelling technology to reduce background noise in calls. Clearer, more natural sounding calls go a long way in making it possible for us to make calls with or without assistive technology.

II. ACCESSIBILITY UNDER SECTION 716

The Consumer Groups and Telecom-RERC continue to find the vast majority of certain kinds of advanced communication services (ACS) not to be fully accessible to deaf and hard of hearing people. In our 2012 comment, we highlighted many of these accessibility issues and have seen no improvement over the last two years. While not usually totally inaccessible, many ACS have only limited accessibility.

Video Conferencing Services

Video conferencing services have been a boon for many Americans who are now able to see the other party while communicating through these services with friends, family, and colleagues. While many deaf and hard of hearing people also enjoy video conferencing services, these services, as explained below, are not completely accessible and usable by deaf and hard of hearing people.

[3] See "Possible Design Change for the iPhone 6 – Eliminating the Headphone Jack – Has Some Apple Fans Fuming," NY Daily News, http://www nydailynews.com/life-style/iphone-6-require-new-headphones-apple-fans-fuming-article-1.1826371(June 12, 2014).

1. *Relay Services Are Not Accessible Through Video Conferencing Services*

Relay access for deaf and hard of hearing people continues to be tethered to ten-digit telephone numbers despite more and more calls being made using ACS such as video conferencing services. We have heard from deaf and hard of hearing people about being unable to join work video conferencing calls using relay services since these calls are outside of the telephone network. We need to be able to include relay services, both video relay and text-based relay in our video conferencing calls. These video calls allow people to see each other's body language, facial expressions, diagrams and even presentation slides – all of which is valuable visual information. As we explained in our 2012 comment, the technology, as demonstrated by Google Hangouts, is already available to incorporate relay services into video conferencing calls.[4]

Moreover, incorporating relay services in video conferencing calls will allow multiple deaf/hard of hearing callers to share one relay interpreter/captioner, rather than each individual having to call in using one's own interpreter/captioner and thus saving TRS minutes. The Commission needs to create rules that require video conferencing services to integrate their systems with relay services.

2. Video Conferencing Services Need to Be Interoperable with Videophones

The far majority of video conferencing services are not interoperable with video phones provided by Video Relay Service (VRS) companies. Deaf and hard of hearing people who only have videophones provided by VRS companies are unable to connect to people who are use off-the-shelf video conferencing services such as Skype, FaceTime, and Hangouts.[5] While more and

[4] "Today, A New Advancement in VRS Calling," *Jared Evans Global Microbrand*, http://www.jaredlog.com/?p=1712 (July 6, 2012).

[5] The Consumer Groups discussed the lack of interoperability for non-voice media and services, and the need for the Commission to ensure accessibility in the migration to IP networks in our Open Internet comment. This

more deaf/hard of hearing people have access to off-the-shelf video conferencing services, many, especially those who are older, only have videophones from VRS companies. Therefore, these individuals are only able to video-conference with other deaf or hard of hearing people who have similar videophones. A drawback is that the Commission does not permit hearing people to have videophones. This is especially frustrating since many hearing people, especially family and friends, know sign language and can communicate directly through video conferencing, but instead must use relay services for these calls which is an unnecessary use of the TRS Fund.

Even within VRS, there is a lack of interoperability among videophone devices and we have repeatedly encouraged the Commission to create stricter VRS interoperability rules. This can also help promote direct communication and lessen the load on the TRS Fund.

3. Video Conferencing Services Need to Be Interoperable With Each Other

The majority of mainstream video conferencing services are not interoperable with each other. This lack of interoperability is problematic for deaf and hard of hearing people use video conferencing services to communicate with each other in the same way that hearing people communicate with one another via the telephone.[6] Since these mainstream video conferencing services are not interoperable with each other, we often have to have accounts with several different providers so that we can make calls to people using a wide variety of these services. It's an inconvenience and somewhat similar to a hearing person having to have telephone accounts/phones with several different phone carriers. On some devices, memory limitations may force the user to install and uninstall video chat applications to communicate with a friend who does not have the same software.

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situation presents barriers to direct communication between people who are deaf or hard of hearing and their hearing counterparts. Consumer Groups Open Internet Comment, GN Docket No. 14-28, page 10 and 11, http://apps.fcc.gov/ecfs/document/view?id=7521707584 (July 18, 2014) ("Consumer Groups Open Internet Comment").

[6] Consumer Groups Open Internet Comment discussing the lack of interoperability at 10 and 11.

4. *Video Conferencing Services Need to Allow Users to Prioritize for Accessibility*

Video conferencing services are designed with hearing users in mind and under poor network conditions generally favor audio quality over picture quality, and also picture quality over frames per second. These settings are disadvantageous to deaf and hard of hearing people who use sign language to communicate. We need to be able to prioritize modalities on our video conferencing services so that they will best support our communication needs – such as favoring frames per second over other data so that we can communicate in sign language under lower quality network conditions.

Games and Gaming Systems

Many deaf and hard of hearing people continue to be unable to access games that use ACS components for communication between participants. In many online multi-player games, players communicate with each other not only during game play but also prior to and following the games using the game software. These gaming systems need to be accessible such as the ability to chat through text, include relay services, and more. We discussed access to gaming in our 2012 comment as well as our opposition to EAS's waiver petition.[7]

Accessible Alerting Settings

As discussed in our 2012 comment, we continue to see ACS that lack accessible alerting features such as vibration and flashing lights. When we receive a video conferencing call on our smartphones, we are not always able to get alerts through vibration and/or flashing lights. If we don't have accessible alerts, then we miss incoming calls and other messages.

[7] Consumer Groups Opposition to Petition for Waiver by Entertainment Software Association, CG Docket No. 10-213, http://apps fcc.gov/ecfs/comment/view?z=feqb2&id=6017038899 (June 14, 2012).

ACCESSIBILITY OF OTHER/NEW COMMUNICATION TECHNOLOGIES

The Consumer Groups and Telecom-RERC continue to see many barriers in current as well as new communication technologies.

Wireless Data Accessibility

The Consumer Groups and Telecom-RERC continue to be concerned about the growing trend among wireless carriers where they are no longer offering unlimited data plans and are instead metering, throttling and sometimes capping their data plans.[8] Many deaf or hard of hearing people are especially reliant on data based telecommunications from their wireless devices and are suffering disproportionately from metering, throttling, and capping of data plans. We use data plans to send emails, instant messages, and communicate via video conferencing services. Some of these data based communications use significant amounts of data, especially video conferencing. Video conferencing services are to deaf and hard of hearing individuals the equivalent of what traditional telephones are to people who can hear. Additionally, both VRS and text based relays use data.

We have heard from our members that some of them are exceeding these wireless monthly data caps of 2 GB or 3 GB and are paying overage fees. We foresee this becoming a larger problem as wireless network speeds improve and more and more deaf and hard of hearing people make video and video relay calls from their mobile devices. Since we require video conferencing services for direct communication access in telecommunications, we don't have the ability to buy a cheap phone with an inexpensive phone plan. Instead, the majority of us have to splurge for fancy smartphones and expensive data plans as well as additional fees for exceeding monthly caps.

[8] Consumer Groups Open Internet Comment discussing data caps at 15.

We are especially concerned about recent reports of a major carrier throttling data speeds of unlimited customers.[9] The burden of such throttling falls disproportionally on deaf and hard of hearing people who use video conferencing services for essential communication and even Internet-based relay services for 911 calls. Such throttling can mean that a 911 call made through Video Relay Service is slowed down to the point where video communication is not possible. Moreover, any data caps imposed can suddenly cut off a deaf or hard of hearing person from the data network and make it impossible to make/receive relay as well as video calls.

Access for the Deaf-Blind

Although the National Deaf-Blind Equipment Distribution Program (NDBEDP) is a step forward, it does not resolve fundamental telecommunication access barriers that individuals who are deaf-blind face. In particular, those for whom ASL is the primary mode of communication, as well as those who have limited computer literacy, stand to reap only very limited benefits from the NDBEDP. A large group of deaf blind people would benefit greatly from having Communication Facilitators, interpreters who are physically present to translate a videophone call. The Commission needs to develop new forms of relay services to accommodate the needs of people who are deaf and have another disability, such as matching deaf or hard of hearing callers with mobility disabilities with VRS interpreters who can understand and interpret for them.

Accessibility of Voice-Controlled Technology

In the past two years, we have seen a rise in voice-controlled technology, such as with wearable devices.[10] While voice-controlled technology benefits many, it is largely inaccessible to

[9] FCC Questions Verizon Plan to Manage Data Speeds for Some Customers, *Wall Street Journal*, http://online.wsj.com/articles/fcc-questions-verizon-plan-to-manage-data-speeds-for-some-costumers-1406756051 (July 30, 2014).

[10] Google Launches Android Wear, an Operating System for Wearables, *San Jose Mercury News*, http://www mercurynews.com/business/ci_25367246/google-launches-android-wear-voice-controlled-operating-system-wearables (March 18, 2014).

deaf and hard of hearing people who do not speak or do not speak clearly. It is critical that these technologies which range from home security systems to cars to wearables to kitchen appliances continue to be accessible and usable through non-voice dependent systems. We hope that the Commission can monitor these emerging technologies and make sure that they comply with all of the Commission's accessibility rules, especially as many of them will include ACS.

Access to Captioned Phones with Wireless to Home Services

In the last year, consumers who depend on captioned telephones face a new threat: carriers eliminating copper and fiber infrastructure in favor of wireless connectivity to homes.[11] These wireless home systems are typically brought to rural areas and in areas that have faced major disruption, such as Long Island after Hurricane Sandy. We understand that wireless home systems do not support both voice and data.[12] We know of a veteran who was persuaded to voluntarily switch to wireless because he was promised lower bills. Instead of cost savings, he was unable to use the captioned phone at all. In addition, in places where a workaround has been found to allow captioned phone use over wireless systems, service personnel are unaware of the workaround. We have heard complaints of intermittent service to captioned phones, certainly a problem if the consumer needs to reach 911 services. Such problems need to be resolved before consumers who depend on captioned telephone services are asked to switch to wireless home services.

III. CONCLUSION

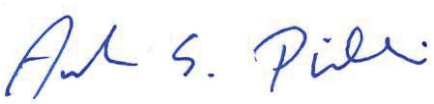
The Consumer Groups and Telecom-RERC appreciate the opportunity to submit comments in this important rulemaking. While we appreciate all of the Commission's hard work and support in the last two years in areas such as IP closed captioning, text-to-911, and closed

[11] Consumer Groups Open Internet Comment at 12.

[12] Consumer Groups Open Internet Comment discussing that standalone analog and IP captioned telephones do not work reliably on telephone services that are provided via wireless base stations at 12.

captioning quality, the Commission needs to do more to ensure the accessibility of ACS. Deaf and hard of hearing people are falling behind as ACS such as video conferencing services rapidly evolves and becomes more and more integrated into our daily lives.

Respectfully submitted,



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ATTACHMENT 2

DAC Recommendation on RTT

APPROVED AND ADOPTED BY THE
DISABILITY ADVISORY COMMITTEE
February 23, 2016

Recommendation of the FCC Disability Advisory Committee
Technology Transitions Subcommittee
February 23, 2016

WHEREAS Real-Time Text (RTT) is a mode of communication that enables real-time transmission of text, for the purpose of a text-based or text-supported conversation between users in which text may be transported alone or in combination with other media in the session, such as voice and video[1], and

WHEREAS the Disability Advisory Committee at the October 2015 meeting has previously adopted a recommendation on Real-Time Text and viewed a demonstration of a particular RTT solution[2]; and

WHEREAS the Twenty-First Century Communications and Video Accessibility Act (CVAA) encourages the "possible phase out of the use of current-generation TTY technology"[3] in favor of "more effective and efficient technologies;" and

WHEREAS the deficiencies of current-generation TTY technology have been noted in the FCC Emergency Access Advisory Committee Report on TTY Transition;[4] and

WHEREAS the Emergency Access Advisory Committee recommendations for an Internet Protocol (IP)-based RTT technology proposed capabilities that included (but were not limited to) the following[5]:

(1) All telecommunication functions that are available to voice-based users of the telecommunication system must also be available to users of RTT (e.g., the ability to transfer a call, the ability to establish multi-point conference calls, the ability to record and retrieve messages from voicemail systems, the ability to access and operate menu-based automated attendant and IVR systems).
(2) The amount of time that elapses between when text is typed by a sender and when it appears on the display of the recipient's device shall not be more than one second greater than the point-to-point latency for voice communication between those two endpoints.

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[1] *See* 3GPP TS 23.226 Global Text Telephony, Stage 2, Version 5, available at: http://www.3gpp.org/ftp/specs/archive/23_series/23.226/
[2] Recommendation of the FCC Disability Advisory Committee Ad Hoc Real-Time Text Subcommittee, October 2015, available at https://www.fcc.gov/general/disability-advisory-committee
[3] *See* Public Law 111-260, 124 Stat. 2751 (2010), § 106(c)(6) *("CVAA")*
[4] *See* Emergency Access Advisory Committee, Report on TTY transition, (March 2013), https://apps.fcc.gov/edocs_public/attachmatch/DOC-319386A1.pdf *("EAAC Report").*
[5] *Id*.

(3) It must be possible to users of RTT to send-and-receive simultaneously. (In other words, users must have the ability to interject a comment or interrupt each other, and not be required to "take turns" or wait for a "GA" prompt before typing.)
(4) It must be possible for RTT to be usable in conjunction with other media as part of the same communication session, for example in order to provide streaming text captions in conjunction with a voice-based telephone call or a video teleconference.

WHEREAS different methods for supporting a RTT function in telecommunication and advanced communications services and equipment have been identified[6]; and

WHEREAS ensuring RTT interoperability among telecommunications and advanced communications services and equipment is an important objective of the Disability Advisory Committee (DAC); and

WHEREAS the method(s) for supporting RTT must be 'achievable'[7]; and

WHEREAS, as new technology emerges for voice communications, additional guidance from the FCC, as part of a rulemaking, is necessary to reflect changing consumer behavior and preferences for the transition from TTY technologies to RTT; and

WHEREAS, the FCC has recognized the limitations of TTY on some wireless networks, while also recognizing the potential of RTT services;[8] and

WHEREAS, the availability of RTT as a native functionality across telecommunications and advanced communications services and equipment is under various stages of development; and

WHEREAS, the DAC has recommended that the FCC initiate a rulemaking to explore the practical and legal questions raised by a transition from TTY technology to RTT or other next-generation text-based communications solutions and its impact on consumers with disabilities, service providers and manufacturers.[9]

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[6] *See* Notes 1 and 4; This recommendation is not intended to address services that are limited to text communications without a voice component. For example, e-mail or other electronic messaging services are not within the scope of this recommendation, but VoIP and interoperable video conferencing communications services are within the scope of this recommendation.
[7] *See* 47 U.S.C. §617 (g).
[8] *See Petition for Waiver of Rules Requiring Support of TTY Technology*, GN Docket 15-178, Order, DA 15-1141, __ FCC Rcd ____ (CGB PSHSB WTB WCB 2015) (*AT&T TTY-RTT Transition Waiver Order*); *See also* Note 3.
[9] Recommendation of the FCC Disability Advisory Committee Ad Hoc Real-Time Text Subcommittee, October 2015, available at https://www.fcc.gov/general/disability-advisory-committee.

1. RECOMMENDED, as part of a rulemaking, the FCC should consider under what circumstances telecommunications and advanced communications services and equipment should support RTT as a native function[10], unless such equipment does not support any way to generate, present, receive or display text for other purposes; and

2. RECOMMENDED further, as part of the rulemaking, the FCC should consider how to ensure that a provider of telecommunications or advanced communications services not impede or impair RTT communication, consistent with 47 USC §251(a)(2) and 47 U.S.C. §617(d); and

3. RECOMMENDED further, as part of the rulemaking, the FCC should consider an appropriate transition period for manufacturers and providers of telecommunications and advanced communications services and equipment to support RTT as a native function, if required, and that downloadable applications that provide the RTT functionality should be permitted until the eventual phasing in of native RTT functionality; and

4. RECOMMENDED further, that, in order to ensure RTT-to-TTY interoperability during a transition period as part of the rulemaking, the FCC should consider how transcoding between RTT and TTY should be performed with less than 1% character error rate end to end for all characters that are specified by TIA-825a for emergency and non-emergency calls;[11] and

5. RECOMMENDED further, as part of the rulemaking, the FCC should consider whether legacy state TTY relay services should be upgraded to support RTT+voice interoperability standards; and

6. RECOMMENDED further, as part of the rulemaking, the FCC should consider a TTY sunset period when declining wireline TTY minutes reaches a certain threshold to be determined, while addressing the needs of people who are deaf-blind, speech disabled, and have cognitive impairments as well as for relay services and rural access; and

7. RECOMMENDED further, that newly manufactured and offered wireless equipment and services that support interoperable RTT consistent with Recommendation 4 need not support TTY services and equipment; and

8. RECOMMENDED further, as part of the rulemaking, the FCC should consider how telecommunication and advanced communications services and equipment that support RTT provide the users of RTT (either in isolation or in conjunction with other media) with access to the same telecommunication and advanced communications functions and features that are

[10] Consistent with the CVAA, this should apply to newly manufactured, offered or updated telecommunications and advanced communications services and equipment.
[11] *See* EAAC Report, n3; *and* Detailed Functional and Interface Standards for the NENA i3 Solution, Version NENA 08-003.v1 (and later versions, including NENA-STA-010), available at: https://www.nena.org/?page=i3_Stage3

provided to voice-based users of the services and equipment. Specifically, as part of the rulemaking, the FCC should consider whether RTT equipment and services should support the following features:

a) *initiate* a communication session using the same procedures used in voice telecommunication endpoints on the system (e.g., by manually dialing a phone number or by selecting a number from a directory);
b) *transfer* a communication session using the same procedures used in voice telecommunication endpoints on the system;
c) *initiate a multi-party teleconference* using the same procedures used in voice telecommunication endpoints on the system;
d) send text and receive text simultaneously;
e) intermix voice and text on the same call, including, for example, 'Voice Carry Over' and 'Hearing Carry Over';
f) use messaging, automated attendant, and interactive voice response systems;
g) Caller Identification and similar telecommunication functions; and
h) In order to support users who require voice carry over, and consistent with the recommendation of the US Access Board Telecommunications and Electronic and Information Technology Advisory Committee (TEITAC), voice telecommunication endpoints that have a multi-line visual display be able to receive and display time-synchronized RTT transmissions that associated with active voice communication sessions.

9. RECOMMENDED further, as part of the rulemaking, the FCC should consider whether telecommunication and advanced communications systems can support the use of RTT simultaneously in conjunction with the other Real-Time media supported by the system, ensuring text packets and voice packets can be:
a) Routed via the same network pathways;
b) Use the same 'transport layer' protocol; and
c) Use the same method to reduce point-to-point packet loss

10. RECOMMENDED further, that the DAC encourages the FCC to expeditiously evaluate and examine possible protocols and standards for RTT interoperability; and

11. RECOMMENDED further, the FCC should seek comment on whether existing standards and their variants can be used to support RTT interoperability, as well as seek comment on standards that might need to be developed or modified to support interoperable RTT communications for new and emerging technologies.

12. RECOMMENDED further, the FCC should consider whether to recognize RFC-4103 as a standard that meets the above criteria and can support interoperable RTT communication, while addressing concerns about competing standards impeding RTT interoperability.

APPROVED AND ADOPTED BY THE
DISABILITY ADVISORY COMMITTEE
February 23, 2016

ATTACHMENT 3

Proposed DAC HD Voice Recommendation

Recommendation of the FCC Disability Advisory Committee
Technology Transitions Subcommittee
HD VOICE
June 16, 2016

1. WHEREAS standard definition voice quality associated with the public switched telephone network (PSTN) is becoming competitively obsolete; and

2. WHEREAS traditional analog telephone systems, as well as digital and IP systems that use narrow-band encoding, do not transmit sounds that are higher than approximately 3,400 Hertz (Hz), which is problematic since some of the acoustic cues that are important for speech intelligibility will be at frequencies above that level; and

3. WHEREAS users who are deaf or hard of hearing generally have reduced access to or a reduced ability to extract the defining properties that distinguish speech sounds from each other; and

4. WHEREAS the addition of acoustic information above 3,400 Hz increases the amount of speech that may be available by approximately twenty percent;[1]

5. WHEREAS the additional amount of available speech improves speech understanding, reduces expenditures of mental effort, and provides better overall speech quality for deaf and hard of hearing individuals[2]; and

6. WHEREAS users who have undiminished hearing, may not significantly benefit from additional bandwidth in terms of speech understanding, but they may benefit in terms of improved overall speech quality and reduced mental effort during the speech perception task[3]; and

7. WHEREAS Internet Protocol (IP) telecommunication systems are less constrained by the technical barriers that limit the acoustic performance of traditional telephone systems; and

8. WHEREAS all of the commonly used HD voice telecommunication methods remove some audio information in order to reduce the number of bits-per-second required for digital transmission with the objective of doing it in a manner that reduces the impact on speech intelligibility; this removal of information could impact the reliability of legacy systems[4] that transmit data as audio tones; and

9. WHEREAS support for wide-band audio (hereafter "High-Definition voice" or "HD voice") in telecommunication equipment and services would benefit all users in that it would enhance the quality of voice communications for all consumers, particularly those who are deaf or hard of hearing; and

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[1] Mead Killion and H. Gustav Mueller (2010). Twenty Years Later: A New Count-the-Dots-Method. The Hearing Journal 63:1, 10-17. Online: http://www.etymotic.com/media/publications/erl-0113-2010.pdf (Last accessed: 4/15/2016)

[2] Linda Kozma-Spytek, Paula Tucker, Mary Garvert, and Christian Vogler (2016). AT&T Final Report. Online: http://tap.gallaudet.edu/IPTransition/Wideband%20Audio/ (Last accessed: 4/7/2016). Filed with the Federal Communications Commission in Docket 13-5, April 7, 2016,

[3] *Id.*

[4] Alarms, medical devices, TTYs and comparable systems encode their data as audio tones and transmit them over PSTN. Some HD Voice encoding techniques, due to being optimized for voice communications, are unable to transmit such data without introducing errors.

10. WHEREAS IP techniques that support HD voice already exist and have been implemented successfully for voice communication in a variety of telecommunication products, systems, and services; and

11. WHEREAS industry associations have begun to update their hearing aid compatibility (HAC) standards and testing procedures to accommodate HD Voice for deaf and hard of hearing people[5]; and

12. WHEREAS there are different commonly accepted digital encoding and transmission techniques to support HD voice in telecommunication equipment and services; and

13. WHEREAS IP techniques that can encode and transmit sounds up to approximately 7,000 Hz are available and have been implemented in a variety of applications; and

14. WHEREAS examples of such applications include, but are not limited to, the ITU-T G.722 standard, the ITU-T G.722.2 standard, the ITU-T G.711.1 standard, and the Opus technique; and

15. WHEREAS existing implementations use different HD Voice codecs because of differing needs and technical constraints; and

16. WHEREAS because a single HD Voice codec would be unable to meet these differing needs and constraints, a means for enabling a variety of different HD Voice codecs[6] is needed to allow these implementations to work together for the widespread adoption of HD Voice; and

17. WHEREAS technical discussions and recommendations within appropriate stakeholder groups, such as standards bodies, are necessary to further evaluate the technical issues raised herein.

1. RECOMMENDED that the Federal Communications Commission (the "Commission") consider the benefits and opportunities that HD Voice technologies can provide deaf and hard of hearing users as compared to standard definition voice services, and that the Commission undertake this consideration as consumers come to adopt new technologies; and

2. RECOMMENDED further, that the Commission seek the consensus of service providers, equipment manufacturers, and consumer representatives on whether any further actions are necessary to achieve HD Voice interoperability between platforms, such as recommended encoding techniques, timelines or benchmarks; and

3. RECOMMENDED further, that if the FCC seeks to adopt new rules or requirements related to HD Voice interoperability, the Commission investigate whether potential HD voice encoding techniques for implementing interoperability between platforms are subject to patent or other intellectual

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[5] See, e.g., the most recent revisions to TIA-1083 for including magnetic testing for HD Voice.

[6] G.722 is used most commonly within enterprise telephony systems (see Note 1 at https://www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-ict-refresh/background/teitac-report/6-the-recommendations), G.722.2 is used most commonly in cellular systems (see http://www.gsma.com/newsroom/wp-content/uploads/IR.92-v9.0.pdf), and Opus is used most commonly in browser-based telecommunications applications (see https://tools.ietf.org/html/draft-ietf-rtcweb-audio-11#section-3). Each of these have trade-offs – for example, G.722 is computationally simple and therefore economically feasible in typical low-cost wireline IP telephones, but does not have the ability of the other techniques to adjust the data transmission rates, while G.722.2 has been standardized for mobile networks because of its resource efficiency; Opus is able to scale up frequency ranges and bit rates for a wide range of different applications with different requirements.

property encumbrances and if so, whether those encumbrances are based on invalid patents and/or are subject to fair, reasonable, and non-discriminatory (FRAND) licensing commitments; and

4. RECOMMENDED further, that the Commission should consider exploring the impact of HD voice encoding techniques or standards for interoperability between platforms on the possible effect on functions such as home alarm systems, medical equipment, analog captioned telephones and TTYs[7], and how this impact can be mitigated; and

5. RECOMMENDED further, that the Commission initiate steps to ensure that IP-based relay service providers are able to interwork with any communication service provider that supports interoperable HD voice, and that HD Voice is made available to relay service users for every call where it is offered by the communication service provider on the other side of the call; and

6. RECOMMENDED further, in order to achieve interoperability of HD Voice with both NG9-1-1 and relay services, the Commission should seek feedback from stakeholders on the steps necessary to ensure that interoperable HD Voice encoding techniques are harmonized with the NENA i3 solution[8], and the Commission's relay service interoperability activities under the SIP Forum[9]; and

7. RECOMMENDED further, that the Commission seek feedback from consumers, researchers and industry representatives to determine if technical characteristics[10] should be addressed for the accessibility benefits of HD Voice to be realized by deaf and hard of hearing people.

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[7] *See In the Matter of Transition from TTY to Real-Time Text Technology*, Docket Nos. 16-145 and 15-178, Notice of Proposed Rulemaking, adopted April 28, 2016.

[8] NENA 08-003 v1. Online: https://www nena.org/?page=i3_Stage3 (Last accessed on 4/6/2016)

[9] SIP Forum Video Relay Service (VRS) Task Group. Online: http://www.sipforum.org/content/view/404/291/ (Last accessed on 4/6/2016)

[10] *See* Linda Kozma-Spytek. Voice Telecommunications Accessibility for Individuals with Hearing Loss. Presented to ETSI STQ#47, 6-10 October 2014, Prague, Czech Republic.
Online: http://tap.gallaudet.edu/IPTransition/Wideband%20Audio/ (Last accessed: May 23, 2016.) For example, too-low bit rates in narrowband audio (using the AMR-NB codec) have been shown to hurt speech understanding among people with hearing loss. It is an open question as to whether a similar effect exists for the encoding techniques for HD Voice on mobile networks. Error correction strategies also could potentially have an impact on speech understanding. These two examples do not constitute an exhaustive list, and there may be other technical factors.